System Architecture/Design & *Content Standards* for Animal Acoustic Telemetry (AAT) Data

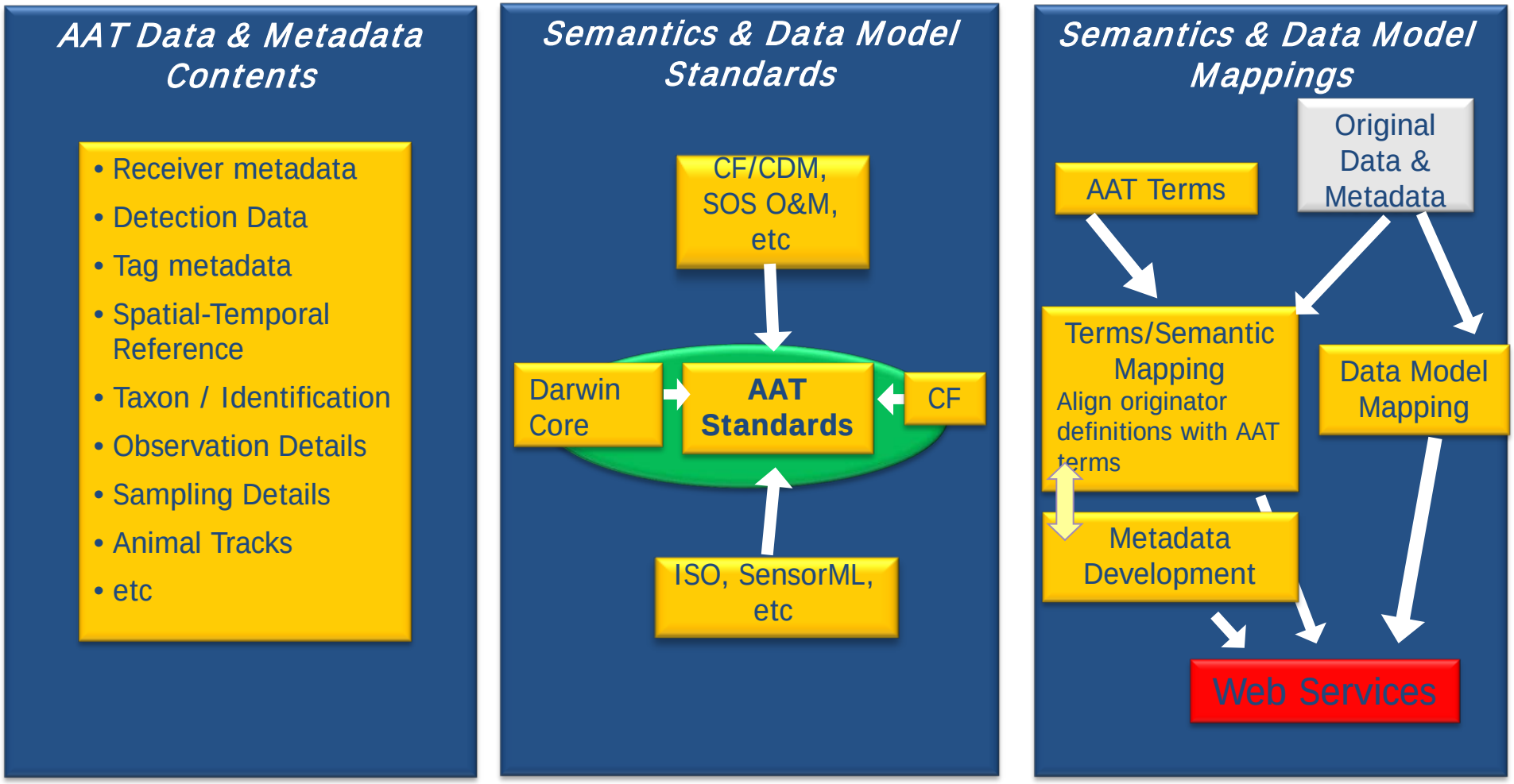
IOOS POST-NANOOS Project

Emilio Mayorga (NANOOS)

John Payne (POST)

Hassan Moustahfid (IOOS)

AAT Standards Development Interoperability of AAT Original Data & Metadata



AAT Data and Metadata Elements

Complex data, compared to conventional physical/chemical observations or direct biological observations!

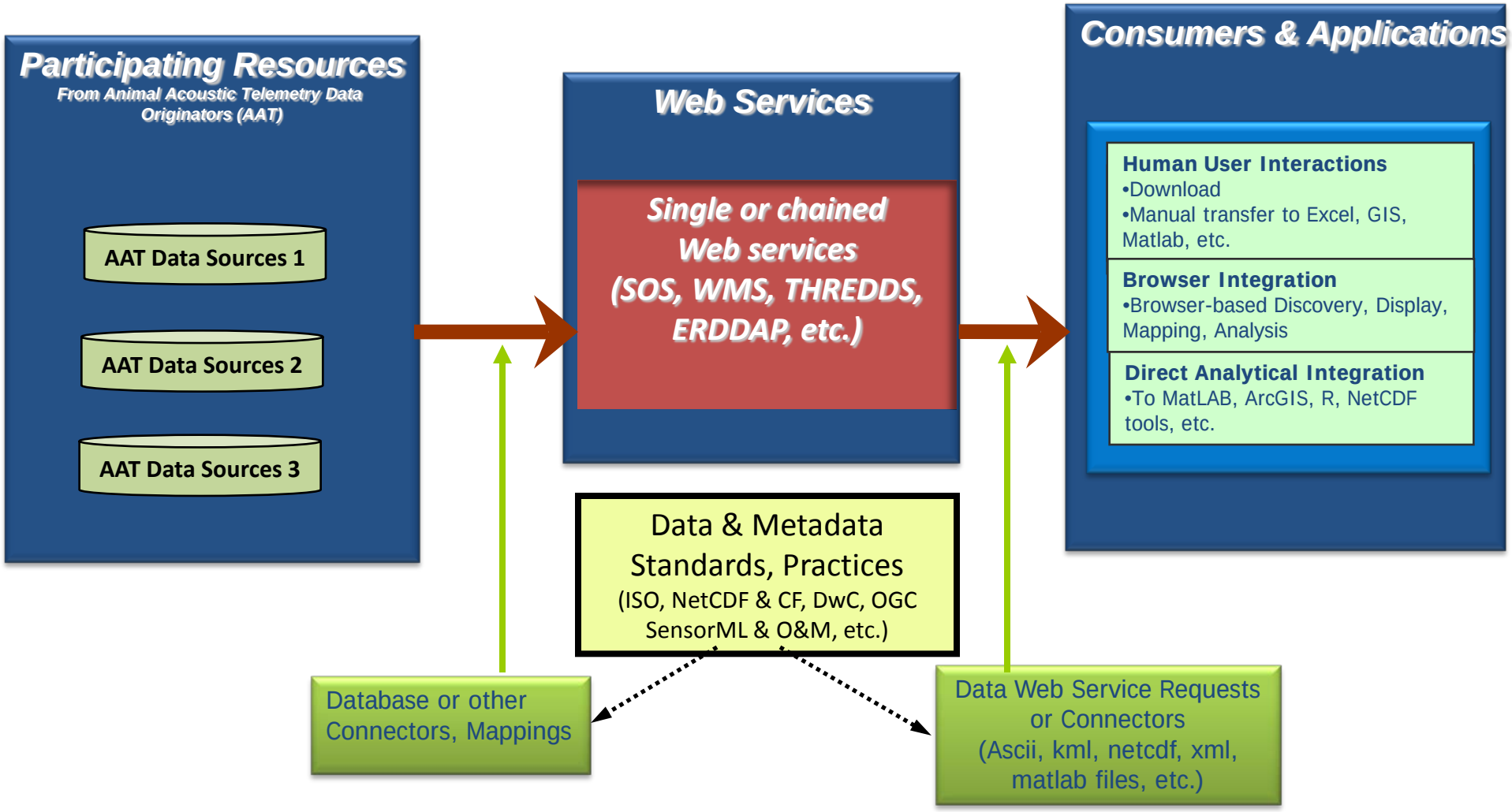
Core Information Elements:

- Sensor Information (*receiver metadata*)
- Sensor Observations (*detection data*)
- "Associated Observed Properties" (*tag metadata*)

Expanded Content (from raw to highly derived).
John's Content Standard categories, discussed later:

1. Dataset Attributes
2. Detections
3. Equipment Logfiles
4. People
5. Tag Deployments
6. Receiver Arrays
7. Tracks

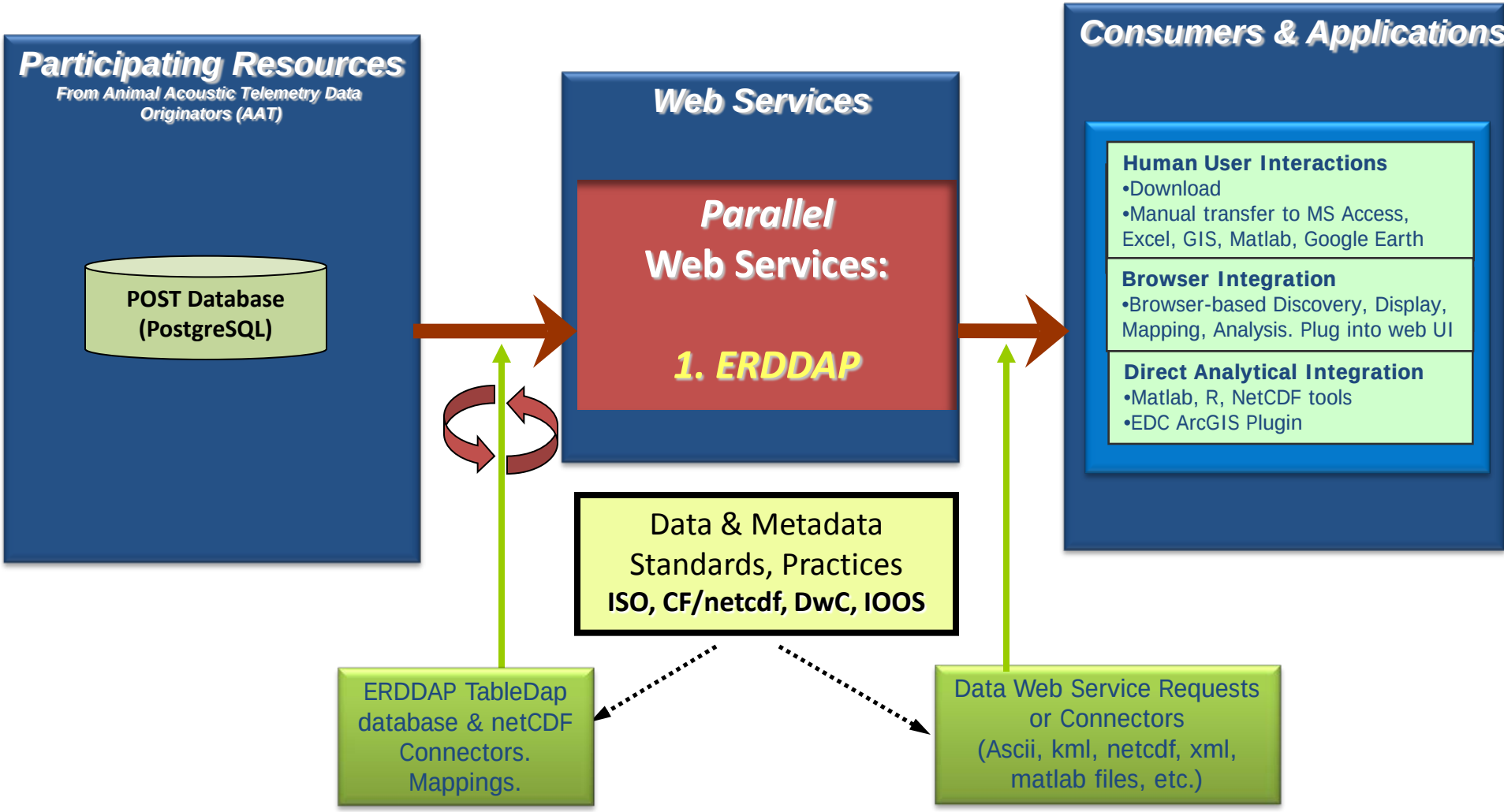
AAT Obs. – High-level System Design Diagram



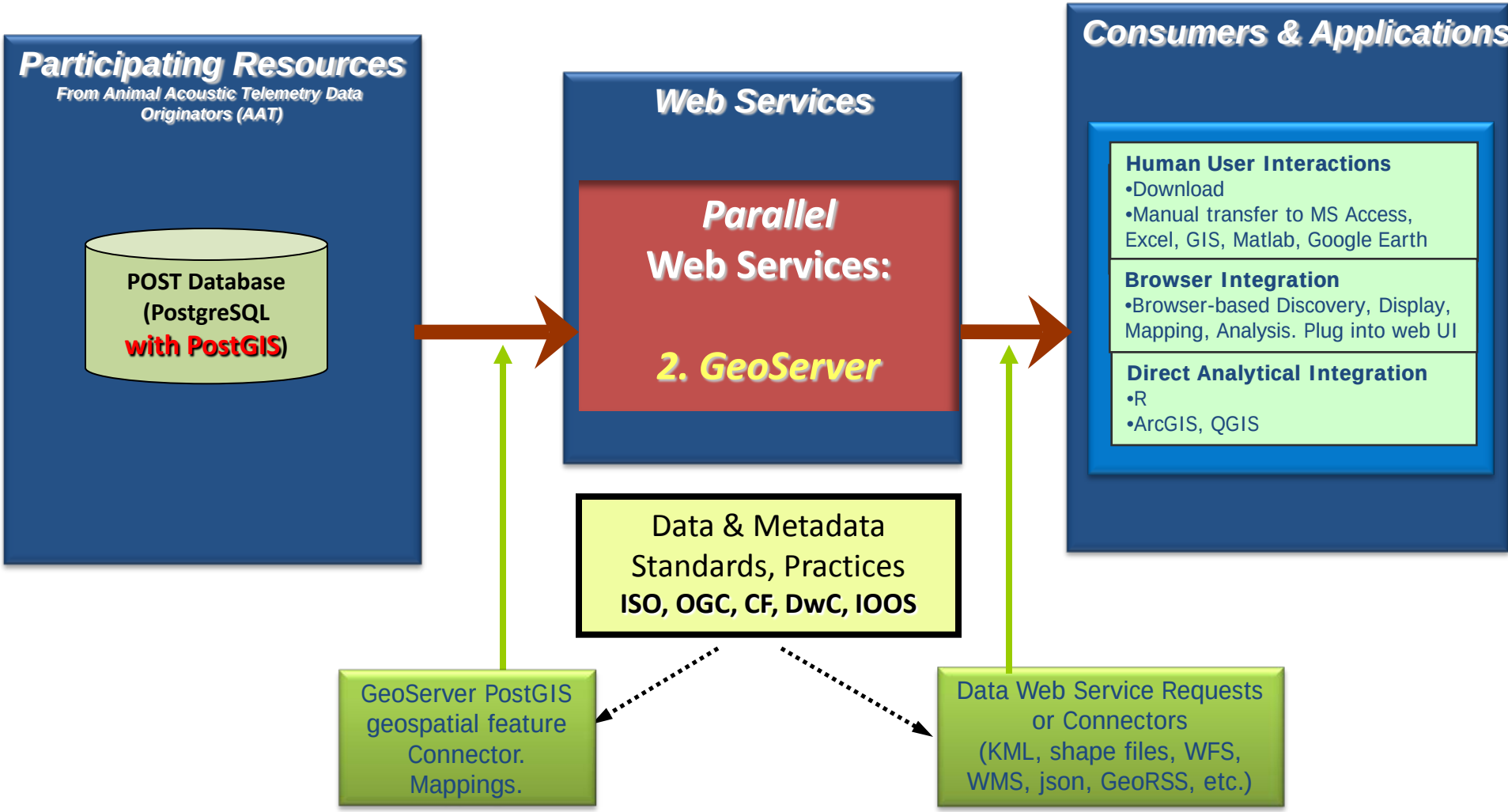
Considerations and Constraints

- **AAT Data Source?** (RDBMS or files? Admin restrictions? Etc)
  - Which source: POST data in OTN database, or original POST database? (Both are implemented in PostgreSQL RDBMS)
- **Metadata** and **Content (semantic) Standard**
- **Data/Information Model**
- **Cohesiveness with IOOS and Biological Data infrastructure**
- **Ease of implementation,** given existing resources and staff.
- **Ability to reproduce elsewhere**
- **Sustainability**, long-term benefits
- **Focus on solid, general architecture to support interoperability** …
- but **enable & demonstrate access by typical users, as much as possible**

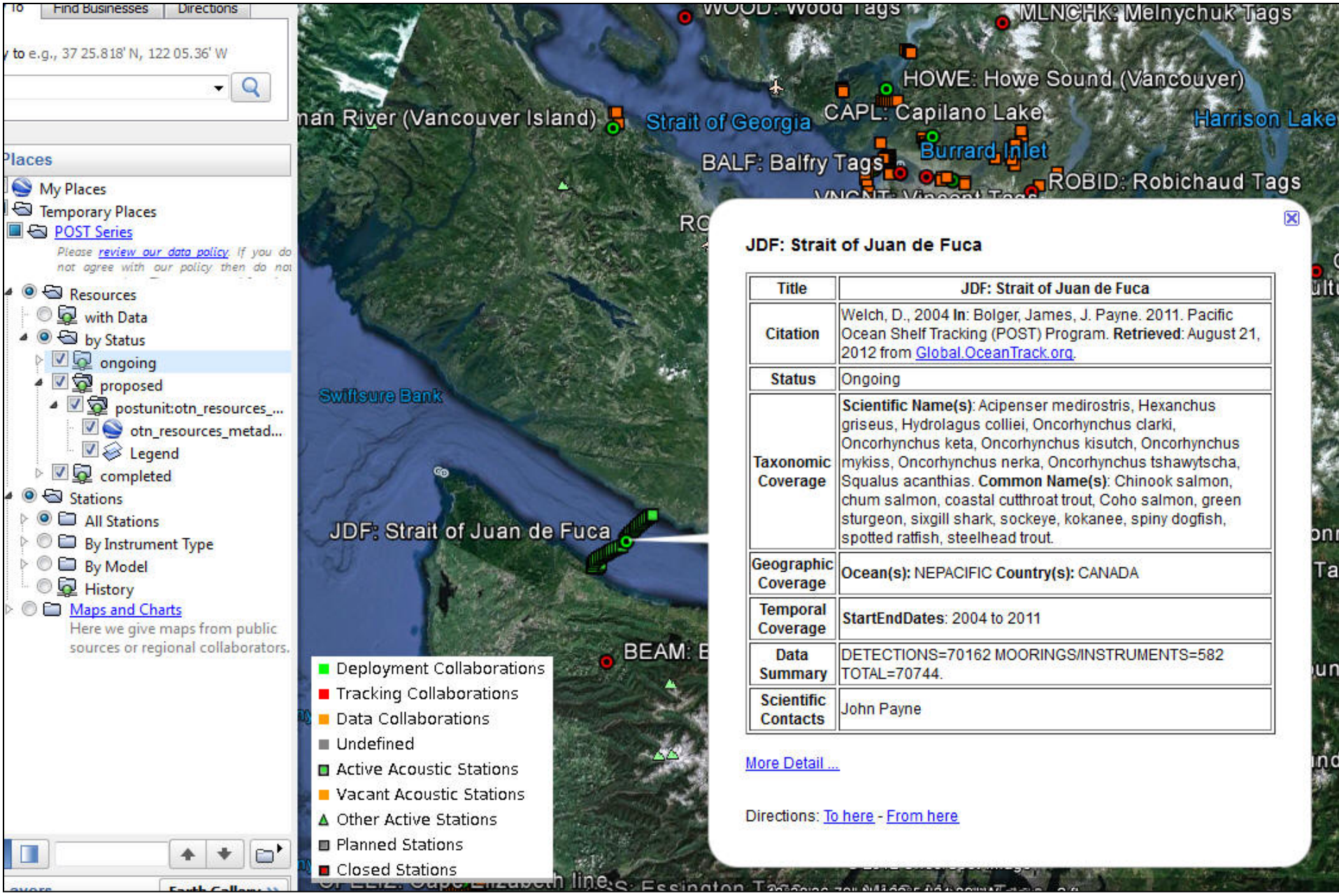
AAT Obs. System Design Diagram – Service Connections:
#1: Database "Views" > netCDF files (CDM) > ERDDAP



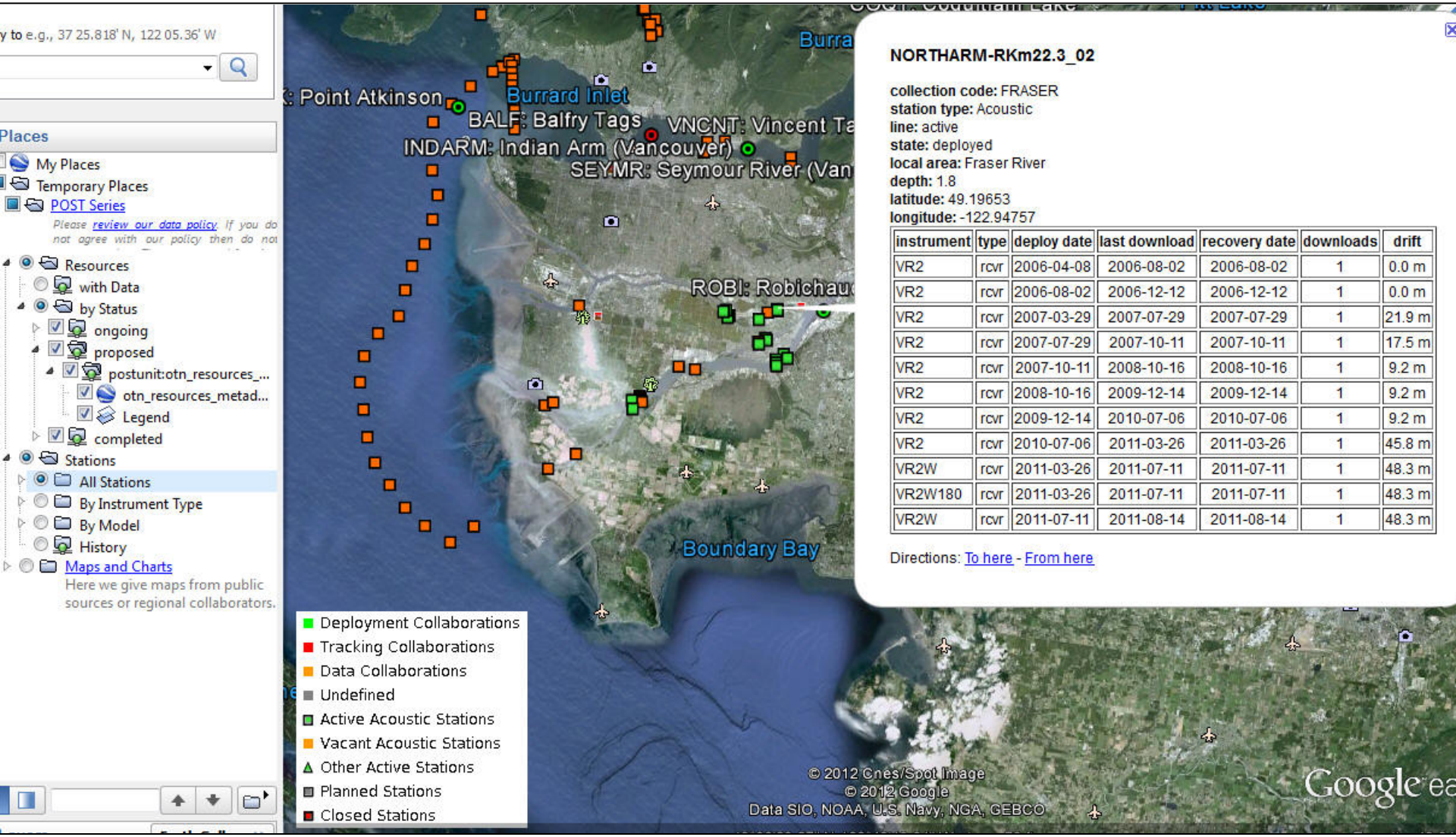
AAT Obs. System Design Diagram – Service Connections:
#2: Database "Views" > GeoServer



OTN: POST Data in Google Earth. Dataset.



OTN: POST Data in Google Earth. Station Deployments.



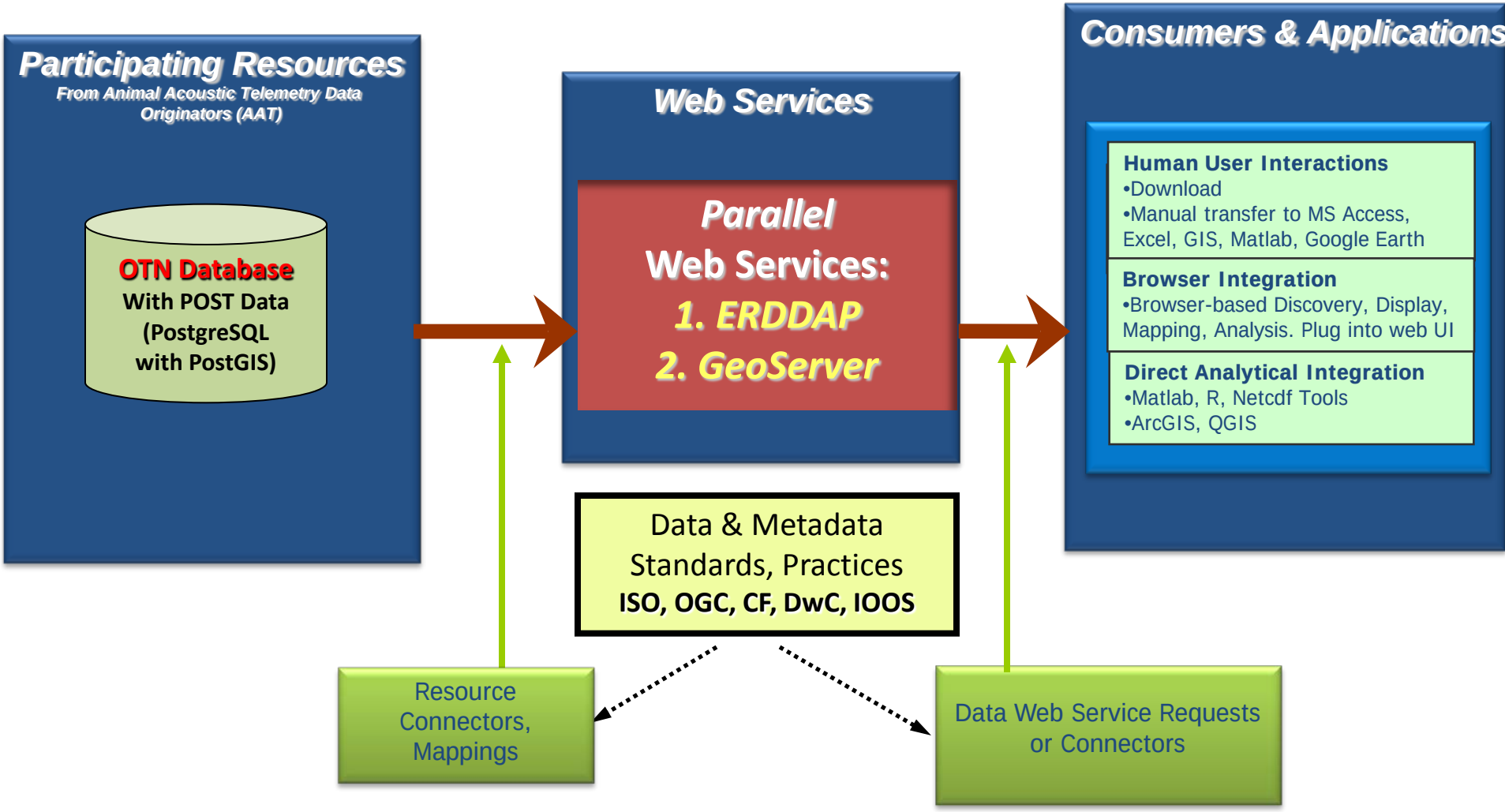
NORTHARM-RKm22.3_02

collection code: FRASER
station type: Acoustic
line: active
state: deployed
local area: Fraser River
depth: 1.8
latitude: 49.19653
longitude: -122.94757

instrument	type	deploy date	last download	recovery date	downloads	drift
VR2	rcvr	2006-04-08	2006-08-02	2006-08-02	1	0.0 m
VR2	rcvr	2006-08-02	2006-12-12	2006-12-12	1	0.0 m
VR2	rcvr	2007-03-29	2007-07-29	2007-07-29	1	21.9 m
VR2	rcvr	2007-07-29	2007-10-11	2007-10-11	1	17.5 m
VR2	rcvr	2007-10-11	2008-10-16	2008-10-16	1	9.2 m
VR2	rcvr	2008-10-16	2009-12-14	2009-12-14	1	9.2 m
VR2	rcvr	2009-12-14	2010-07-06	2010-07-06	1	9.2 m
VR2	rcvr	2010-07-06	2011-03-26	2011-03-26	1	45.8 m
VR2W	rcvr	2011-03-26	2011-07-11	2011-07-11	1	48.3 m
VR2W180	rcvr	2011-03-26	2011-07-11	2011-07-11	1	48.3 m
VR2W	rcvr	2011-07-11	2011-08-14	2011-08-14	1	48.3 m

Directions: To here - From here

AAT Obs. System Design Diagram – Service Connections:
Parallel Development: OTN Database, at OTN Servers



Identical deployment as one based on POST DB on NANOOS servers, Except for *Participating Resource* (OTN DB) and *Resource Connectors*

Questions & Comments?
Likes & Dislikes?

“Content Standards”

An initial discussion

John Payne